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INTEGRATED SOLID WASTE ALTERNATIVE PROGRAM

MANAGER'S GUIDE

U.S. Department of the Interior
National Park Service
Engineering & Safety Services Division
Washington, D.C.

March 1991

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U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Integrated Solid Waste Alternative Program

Manager's Guide

U.S. Department of the Interior
National Park Service
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Contents

Chapter 1.
Introduction / 1

Chapter 2.
Policy and Administration / 3

Policy / 3
Responsibilities / 3

Chapter 3.
Solid Waste Management Issues / 5

Municipal Solid Waste Stream / 5
Energy and Resource Considerations / 6
Degradable Products Issues / 6

Chapter 4.
Integrated Solid Waste Alternative Program / 9

Program / 9
Integrated Solid Waste Alternative Plan / 10
Procedures for Servicewide Implementation / 11
Procedures for Regional Offices and Park Implementation / 11

Chapter 5.
Source Reduction / 13

Alternative Packaging / 14

Chapter 6.
Recycling / 15

Composting / 16
Public Health and Safety Concerns / 17
Siting of Storage Areas and Recycling Stations / 19
Collection Equipment and Container Selection Considerations / 19
Operational Procedures Considerations / 20
Medical and Animal Research Wastes and Sharps Disposal / 21
Administrative Actions and Procedures / 21
Purchasing Recyclables / 21
Procuring Services to Remove Solid Waste / 22
Recovering Recyclables/Reusables / 23

Chapter 7.
Waste Combustion / 25

Compatible with Recycling / 25
WTE Pollution Issues / 26
Ash Management / 27

Chapter 8.
Landfills / 29

New Landfills / 29
Existing Landfills / 30

Chapter 9.
Community Outreach Program / 31

Options if Your Community has Program / 31
Options if Your Community does not have Program / 32
Visitor Information/Education Program / 32

Chapter 10.
Working with Others / 35

Concessioners, Cooperating Associations and Other Contractors / 35
EPA Beverage Container Program / 36

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Appendices

A: Special Directive on NPS Policy on Solid Waste Management / 39
B: Suggestions for Source Reduction / 41
C: List of State Solid Waste Agencies / 43
D: Examples of Solid Waste Contract / 53
E: Example of an Arrangement with Concessioners / 61
F: EPA Beverage Regulations and NPS-48 Concession Guideline / 65
G: Elements of Starting a Recycling Program / 69

Chapter 1. Introduction

In the Organic Act of 1916, Congress directed the National Park Service (NPS) to conserve the scenery, natural and historic objects and wildlife in such ways and by such means as to ensure their enjoyment by future generations. The accumulation of municipal solid waste and the demand for its disposal threaten the resources and visitor-related values of National Park System units. All units of the National Park System, whether urban or remote, are faced with the solid waste management crisis.

Municipal solid waste includes discarded cans, bottles, leaves, lawn clippings, paper, plastic, scrap metal, old tires, food waste and other items commonly referred to as garbage. This trash and the resultant litter are a concern for all park units. Litter despoils the scenic vistas and threatens wildlife that the National Park Service is charged to protect and encourages pests. The cost of collecting and disposing of litter is a drain on already restricted budgets. This crisis consists of diminishing landfill capacity both within and outside of National Park System units, escalating costs of waste transport and disposal and increasing public resistance to siting solid waste disposal facilities in their "backyard."

If current trends continue, the accumulation of solid waste in the United States is anticipated to reach 193 million tons per year by the year 2000. Many landfills both in and outside National Park System units will close in the next several years. New and proposed regulations make the creation and operation of landfills much more difficult and costly.

The National Park Service can become a leader in the management of solid waste. Our role as a leader should include new attitudes and actions towards solid waste disposal practices that will promote a healthier environment, lessen the threat to natural and cultural resources and reinforce our stewardship role as a leading preservation agency.

To respond to the solid waste management challenge, the National Park Service has adopted an integrated approach to solid waste management by implementing the Integrated Solid Waste Alternative Program (ISWAP). This program promotes complementary uses of a variety of waste management practices to safely and effectively handle the solid waste stream with the least adverse impact on human health and the environment.

The *Integrated Solid Waste Alternative Program Manager's Guide* provides the background and procedures for developing an Integrated Solid Waste Alternative Plan (ISWAP) tailored to each park's needs and includes information on related mandatory laws and regulations.

The guide does not address waste identified as hazardous under the Resource Conservation and Recovery Act of 1972 (see NPS-77 and 40 *Code of Federal Regulations* (CFR) Part 261 and staff directives for hazardous waste).

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Chapter 2. Policy and Administration

Policy and Procedures

The National Park Service will implement sound solid waste management practices that reduce the impact on landfills and park environments and promote cooperative efforts and interpretive and educational programs. For specific NPS policy on solid waste management, see Appendix A.

National Park System units will develop and implement a Site Integrated Solid Waste Alternative Plan. Elements of the park plan should seek to maximum participation by including all applicable and feasible actions described in Chapter 4, Integrated Solid Waste Alternative Program.

Responsibilities

Washington Office

The responsibilities of the Washington office (WASO) are as follows:

1. Develop policy and provide NPS guidance through the *Management Policies*, special and staff directives and other guidance documents.

2. Develop and implement a WASO plan that supports the Integrated Solid Waste Alternative Program.

3. Develop and implement servicewide programming, including training, interpretive and administrative thrusts.

Regional Offices

The responsibilities of regional offices are as follows:

1. Provide overview, assistance, coordination and approval for ISWAPs prepared by field units.

2. Develop and implement a regional office plan to support the program.

3. Submit biennial summary report to WASO on the status of ISWAP based on submission of Park ISWAP programs

Park Units

The responsibilities for park units are as follows:

1. Develop and implement a park ISWAP which incorporates all applicable program elements discussed in Chapter 4.

2. Submit ISWAP to Regional Director for review and approval on a biennial basis.

Municipal Solid Waste Stream

Currently, approximately 6,000 landfills are being used in the United States. At the current rate of use, the Environmental Protect Agency (EPA) projects that by 1993 one-third of these landfills will be closed because they are filled to capacity or cannot meet EPA or state regulations. New facilities are not opening as quickly as old facilities are closing because of the difficulty of siting new facilities. For 1988, the EPA estimates of the total MSW, 73% was sent to landfills, 13% was recycled, and 14% was incinerated.

Every American generates approximately 4 pounds per day of municipal solid waste; this waste includes durable goods such as appliances, but not cars or construction debris. This solid waste totalled 179.6 million tons per year in 1988. In many parks, park solid waste is similar to municipal solid waste. Park housing and campgrounds generate waste similar to household waste, and concessioners and administrative offices generate waste similar to business communities outside a park.

The packaging component of municipal solid waste represented approximately 32% of the total volume generated in the United States in 1988. Paper and paperboard products make up over 34% of the volume, or 34% by weight. Newspaper, corrugated boxes and office paper make up the majority of this volume. Packaging includes materials made of plastic, paper, metal and glass.

Leaves, grass clippings and other vegetative waste materials make up 18% by volume of the MSW stream. Many park units also generate this type of waste. Food wastes make up another 7.4% by weight, but this waste, if not processed properly, can produce pest problems, vertebrate management issues and human health concerns.

Although tires and oil make up a small percentage of the total volume, they pose many environmental and human health risks. Whole tires hold stagnant water and may harbor populations of mosquitoes which could potentially carry disease. Tire stockpiles may catch fire, releasing toxic emissions to the air and oil-like liquids that may enter ground or surface water. Tires may be recycled into retreaded tires, reclaimed rubber or incinerated for energy. Waste oil is often disposed of illegally and enters sewage systems or ground or surface water. Oil can be reprocessed into lubricating oil and many other uses. Two-thirds of the 1.2 billion gallons of waste oil generated yearly are currently recycled.

Metals make up 8.5% of the weight and 14% of the MSW volume. Metals include steel and aluminum cans and durable goods. These products are highly recyclable and their reuse reduces the demand for energy. Glass makes up 7% by weight and 2% of the MSW volume. Glass also offers an excellent opportunity to recycle and eliminate much of this weight from the MSW stream.

Plastics make up 9% of the weight and 20% of the MSW volume. Plastics are projected to increase to 10% of the weight as they replace glass, metal and paper packaging and durable objects like plastic lumber are being produced from recycled products. Currently, only 1% of the total plastic wastes is recycled. Recycling efforts have centered on polyethylene terephthalate (PET), which is used for soda bottles, and high density polyethylene (HDPE), which is used for milk jugs. About 20% of the PET beverage containers are recycled. The technology and markets for many other types of plastics recycling are growing, with a focus on polystyrene.

Energy and Resource Considerations

Recycling of materials reduces the amount of energy and raw materials consumed to make products; for example, 95% less energy is used to produce an aluminum can from an existing one than from ore. In 1987, for example, the Aluminum Association says aluminum can recycling saved 10 billion kilowatt/hours of electricity--enough to supply the residential electric needs of New York City for over six months. Recycling 1 ton of paper saves the wood of 17 trees. Glass containers (16 ounce) manufactured from 100% recycled materials consume 1/19th of the British Thermal Unit (BTU), 1/14th (by weight) of the atmospheric emissions and 1/26th (by weight) of the waterborne wastes when compared to the same container made from raw materials (Franklin Associates 1989).

Degradable Products Issues

The degradable products issue, especially with regard to plastics, has recently come to the forefront of the solid waste management discussion. Many legislative bodies on the local and state level have adopted laws mandating the use of bio- or photo-degradable plastics. At the same time, environmental groups have called for a boycott of biodegradable plastics because of the lack of information about environmental effects The following information describes these degradable products and the environmental concerns associated with these products.

Biodegradation occurs when enzymes secreted by microorganisms chemically break down materials. These microorganisms are found in the soil, and biodegradation occurs when these microorganisms contact the target products. These organisms require moisture to carry out this process. Many products in the waste stream (65%), such as paper, food wastes and yard wastes, are potentially biodegradable. However, modern landfills strive to eliminate moisture to reduce the production of methane gas and leachate, both of which need to be carefully controlled. Additionally, a small percentage of the waste actually contacts soil, so the microorganisms necessary for degradation are not present. In modern landfills, degradation occurs very slowly. As an example, Dr. William Rathje, an anthropologist at the University of Arizona, has excavated numerous landfills under various climatic conditions to examine degradation processes. He has unearthed newspapers over 30 years old that are still readable.

Recently new plastic products, in sheet form (such as bags and film), have been introduced that contain corn starch or vegetable oil. These products are being marketed as biodegradable. According to the Environmental Protection Agency, no field data supports the claims made by some manufacturers that a starch-based plastic bag will be reduced to dust in four to five years, or that the final products of degradation will be carbon dioxide, water and humus material. In addition, no evidence exists indicating that biodegradable plastics will reduce the accumulation of municipal solid waste in landfills or contribute to lessening the rate at which landfills are closing.

Photodegradation occurs when ultraviolet radiation (sunlight) attacks a weak link in the molecular structure of the plastic. Photodegradation can be enhanced by developing new polymers that contain photosensitive substances in the polymer chain or with resin additives that are photosensitive and cause degradation of the plastic material. As in biodegradation, the plastics are designed to break into smaller pieces--basically a plastic dust. However, photodegradable plastics entering landfills will not be exposed to light for the amount of time necessary to degrade the products. Studies suggest that plastics reaching the marine environment are often covered by marine organisms that decrease the plastic's exposure to sunlight and decrease the potential for photodegradation.

Questions remain unanswered with regard to the environmental impact of these degradable products. Is the residue from degraded plastics harmful to the ground or surface water supplies? Do the physical by-products (i.e., the small pieces of un-degraded plastic) pose a threat to wildlife? In addition to the obvious concerns associated with entanglement in and ingestion of plastics by larger mammals and birds, the effects that the polymer molecules themselves will have on the lower levels of the food chain are unknown.

Early findings show that degradable plastics, when mixed with plastics intended for recycling, have a detrimental impact on the recycled plastic product. Recycled plastic products are generally made into durable goods such as plastic lumber. If degradable plastics contaminate this mixture, the same chemicals that enhance degradability would work to reduce the durability of the product. Additionally, the promotion of degradable products encourages continuation of the "throw-away" mentality and does little to promote the ideas of source reduction or recycling--more realistic solutions to the MSW problem.

A promotion commonly used by manufacturers of degradable plastics is that they will reduce litter problems. Photodegradation may occur within several weeks, but biodegradation may require several years. When litter is picked up regularly, these processes will not occur quickly enough to decrease litter significantly. When no litter collection occurs, photodegradable products may provide some benefit. However, observation of littering tendencies indicates that the presence of litter may encourage additional littering. Also, the knowledge that certain products are degradable will be less discouraging to the behavior of littering.

Because of the concerns listed above, the National Park Service should not adopt an across-the-board use of degradable plastic products at this time. The Environmental Protection Agency does not support or oppose the use of degradable plastics, but also does not include them in their "Agenda for Action." However, the EPA suggests some possible use for degradable plastics including agricultural films and bags used in composting yard waste. Research is still being conducted in these areas.

Chapter 4. Integrated Solid Waste Alternative Program

Program

The National Park Service has responded to the solid waste management challenge by establishing waste management practices to safely and effectively handle the solid waste stream, with the least impact on human health and the environment. These waste management practices include an integrated approach of five major program elements of the Integrated Solid Waste Alternative Program. All program elements work together to form a complete strategy to manage solid waste in parks and NPS offices. Table 1 presents the overall management strategy for the Integrated Solid Waste Alternative Program.

Table 1. Integrated Solid Waste Alternative Program Elements and Goals

Program Elements	Goals
Source Reduction	Reduce the volume and toxicity of waste that is generated in National Park System units.
Recycling	Use, where appropriate, proper collection and separation practices for the recovery of resources, including glass, aluminum, other metals, paper and paperboard, certain plastics, tires and used oil. Prior to recycling, investigate marketability of materials.
Waste Combustion	Recognize the ramifications of waste combustion facilities and be involved in the local decision-making process that concerns such facilities. This option may be necessary in areas with no suitable landfills. Strive to attain best available control technology for plant construction.
Landfills	Ensure that NPS-operated landfills conform to all applicable federal, state and local laws, refrain from establishing landfills in National Park System units except where no other alternatives exist and monitor the status of landfills in the surrounding communities.
Outreach	Form a partnership with federal, state and local agencies and private organizations and develop interpretative programs to promote sound solid waste management practices both inside and outside National Park System units.

The five major program elements are grouped and presented in a hierarchial classification. The ISWAP hierarchy is to be used as a conceptual tool for goal setting in developing and implementing a local ISWAP. To most effectively address solid waste management problems at the field level, parks should evaluate the program elements against park needs.

The hierarchy begins with source reduction and reuse to reduce both the toxic constituents in products and the accumulation of large quantities of waste. Chapter 5 presents source reduction issues and planning suggestions for a ISWAP.

The second rung in the hierarchy is recycling of materials, including composting of yard waste. Recycling is near the top of the hierarchy because it prevents potentially useful materials from being combusted or landfilled, thereby preserving resources and extending waste disposal capacity. Chapter 6 contains recycling issues and planning alternatives.

Although lower than source reduction and recycling in the hierarchy of desirable solid waste management alternatives, waste combustion is useful in reducing the bulk (although not all) of solid waste and may provide the added benefit of energy production. Chapter 7 presents basic information on the technology that is used for reducing waste by using waste-to-energy (WTE) facilities.

Landfilling, lower in the hierarchy than source reduction and recycling, is essential to handle waste such as nonrecyclables and noncombustibles (see Chapter 8).

Woven throughout the hierarchy is the necessary element of community outreach/visitor information and education. This outreach should provide the necessary information and education that would result in greater support and involvement by the public for solving the solid waste management issues facing our Nation. Chapter 9 presents the community outreach program and Chapter 10 contains information on working with others.

Strict adherence to a rigid hierarchy may be inappropriate for every park and should be based upon the unique waste and demographic characteristics of each National Park System unit. For example, Horseshoe Bend National Military Park in Daviston, Alabama, will more likely choose a different mix of alternatives than Golden Gate National Recreation Area in the San Francisco Bay Area.

Site Integrated Solid Waste Alternative Plan

Reducing the amount of waste that is produced and eventually discarded is an overall objective of a ISWAP. Each park is responsible for identifying the means for accomplishing that objective.

The success of the program may not be measured in dollars. A reduction in waste to landfills, source reduction in supplies or an active community education program that enlightens visitors or neighbors to the environmental effects of waste management may be the "success" of your program.

When planning alternatives for a ISWAP, each park should consider the following factors:

1. Identify where park waste comes from

    - Visitor
    - Staff (office and maintenance goods)
    - Employee residential
    - Concession generated
    - Permittee/leases
    - Inholders/subsistence users
    - Contractors
    - External sources

    Each of these sources should, in turn, identify their waste components to examine the possibilities of reduction. In some cases baseline data generation may require several seasons to track high/low generation levels.

2. Develop goals and objectives for the overall program once waste reduction methods are identified; define the incremental stages of progress toward the objectives and schedule for their accomplishment.

3. Review the plan on a regular basis with the park staff and ISWAP coordinator to identify successes and failures. This review could include a revision of the goals/objectives and the schedule of accomplishment.

Procedures for Servicewide Implementation

1. Identify regional and park coordinators.

2. Establish and present training sessions and the program for regional and park coordinators and park Superintendents.

3. Present objectives at servicewide and regional conferences (i.e., Regional Directors, Associate Regional Directors, Superintendents, Division Chiefs).

Procedures for Regional Offices and Park Implementation

1. Identify ways to accomplish source reduction and to minimize waste including reuse of existing materials.

2. Survey your solid waste stream and determine which materials are recyclable.
3. Identify nearby markets where products are recycled (where possible, tie into existing community efforts, park concessioner efforts, General Service Administration (GSA) Recycling Program, etc.).
4. Compost leaves, grass clippings, saw dust, where practical; chip brush/branches and use for trail maintenance/compost. (Refer to Chapter 6, Composting, for reference to exotic species management concerns).
5. Establish recycling programs in employee housing areas and park campgrounds/picnic areas.
6. Use and promote the use of recycled products.
7. Reinforce ISWAP efforts through regional conferences or zone meetings of those parks with ongoing efforts.
8. Share successes through the Maintenance Newsletter/MM Bulletin Board.
9. Use electronic mail/computer network for regular updates from areas that are implementing the program.
10. Include the ISWAP review in the Operations Evaluation review.

Chapter 5. Source Reduction

Source reduction is the term used to describe the first step in reducing the quantity and/or toxicity of materials and products before the waste is actually generated and discarded. Management approaches must be targeted to fully use and extend the life of an item/material, control inventory size and seek lesser toxic alternatives. Source reduction should be viewed as a long term commitment rather than a one time action.

Every park can "custom design" its ISWAP to be consistent with the park's demographic and waste stream characteristics and federal, state and local requirements. Park managers should recognize that a good source reduction program has the potential to greatly reduce the problems posed by solid waste disposal. However, because solid waste disposal needs will not be completely eliminated by source reduction, park managers will need to identify environmentally preferable disposal options (i.e., combustion and landfills). A word of caution: removal from a park disposal facility to a nonpark disposal facility is not a waste reduction option but a transference of the problem.

In planning a source reduction program, the park manager should consider conducting a waste audit which involves a study of the park's waste stream. This study should determine products and quantities generated, disposal costs including transportation and operation, environmental impacts and specific park needs. By identifying component and quantities of the waste stream, it is much easier to recognize opportunities and measures for source reduction.

Source reduction steps may be different for park operations, park visitors, concessioners, inholders, park neighbors, permitees and volunteers. Source reduction opportunities are widespread. For example, manufacturers can design products that are more durable, repairable, less toxic or otherwise reduce input into the waste stream. Concessioners, cooperating associations and distributors need to make "source reduced" goods available. Parks need to purchase and use products with source reduction in mind. Such actions include purchasing reusables, buying in bulk (an exception to this is the buying of hazardous materials), avoiding excessive packaging, donating rather than discarding and using less-toxic alternatives.

Source reduction techniques often reduce costs beyond those associated with waste disposal. Buying in bulk reduces initial costs and reusing potential waste products prior to recycling or disposal has a definite cost benefit.

Parks play an important role in source reduction by educating park personnel and users and by providing source reduction opportunities. Source reduction should be a long term emphasis without compromise of quality or increased expenditures of funds used for acquisition of materials and products.

Specific suggestions for what park managers, employees and programs can do to implement source reduction are contained in Appendix B. By using the suggestions as a starting point, the source reduction program component can be crafted to address the unique needs of individual parks. Additional suggestions will be added to the list as new information is developed and becomes available.

Alternative Packaging

The National Park Service recommends that when parks are purchasing materials that must be packaged, that they consider packaging as one of the evaluating factors for different products. Packaging is not a simple consideration. Not only should the parks consider the fate of the package, but they should consider the energy and resource issues associated with the manufacture of the container. In other words, holistic or "cradle to grave" thinking should be adopted.

Chapter 6. Recycling

Recycling is the process and technology of separating, collecting and processing any material that might otherwise be discarded and using that material for a new product. Recycling involves collection, separation, preparing to buyer's specifications (e.g., baling), sale to markets, processing, and eventual reuse of materials. Separation and collection of recyclable material is only the first step in the recycling process. If the material is not processed and returned to commerce, then material is not being recycled.

The following items are commonly recycled: aluminum, other metals, paper and paperboard, glass, plastics, tires and waste oil. Because paper and paperboard products contribute heavily to the municipal solid waste stream, parks should seriously consider recycling alternatives that are available for these products.

In many parts of the country, markets for recycled materials are not yet sufficiently developed to handle the growing supply of collected material. When developing a collection program, attention must be paid to developing markets. Markets for recyclables include intermediate markets such as scrap dealers or brokers. Intermediate markets allow materials to accumulate, process them to market specifications and then ship the materials to final markets. Final markets are facilities where recycled materials are converted into new materials. Whenever possible, materials with an established recycling record/value (i.e. glass and aluminum) should be selected in preference to materials with questionable recycling or reclamation value (i.e. plastic).

Recycling is a technology that can prevent depletion of valuable landfill space, save energy and natural resources, provide useful products from discarded materials and even generate revenues (especially when the avoided costs of waste combustion or landfilling are taken into account). Therefore, park managers should give serious consideration to the practicality of recycling and composting programs in their parks.

A variety of alternatives exist for collecting recyclable materials. Each park needs to consider which alternative is most viable for its particular situation. Parks may want to implement a recycling program incrementally, either by commodity to be recycled, or by functional unit of the park. For example, recycling efforts may begin with high quality paper in the administrative offices and composting of park yard waste, expand the recycling of these items to the housing units, adopt glass, aluminum and plastic recycling in these units and finally adopt a parkwide program including concessioners and visitors. The following community collection methods can be adopted to park use alone with other methods:

Curbside Collection: This method requires consumers to sort waste into separate containers that hold recyclable materials and collection by a cooperating waste hauler. Some communities are using methods that separate as many as nine commodities, although other programs use the "one bin" method. This method sorts glass, aluminum and plastic in one bin and sets newspaper to the side, with nonrecyclables in a separate container. Studies have shown that separating trash is easy, taking approximately 15 minutes per week per household. This curbside collection method reflects a high participation rate but is usually expensive to implement. Higher participation is usually found in programs where recyclables are collected on the same day as the regular garbage collection.

Multi-material Collection Centers: A collection center is a stationary site where residents bring recyclable items for drop-off. In some cases recyclers are paid for the materials they bring in, while in other cases they are dropped off and funds are used to further the recycling program and offset the costs. This is the most common form of collection for households, but the volume collected and the participation rate is lower than for curbside recycling. Recycling centers may be located at landfills, incinerators, transfer stations or convenience centers.

Single Material Buy-back or Collection Centers: Single material collection centers are similar to the multi-material centers except that only one commodity, such as aluminum, glass or newsprint, is collected. Buy-back centers or reverse vending machines have been developed by certain industries (e.g., the aluminum industry). These types of centers may be used to begin broader scale programs or in cooperation with concession activities.

Examples of recycling programs are in Appendix E. A list of local recycling centers can be obtain from your State Solid Waste Office program manager (see Appendix C).

Composting

Part of the recycling loop includes the composting of vegetation waste (grass clippings, leaves and brush); composting can transform a significant section of the waste stream into a useful soil additive or mulch. The National Park Service is not suggesting that parks consider composting food wastes at this time due to sanitation and pest problems.

Vegetation wastes from residential areas, class A turf areas, grounds and roadside maintenance can be composted and produce mulch useful in ornamental beds and for some weed management. However, in some parks with exotic species problems, the composting process should be carefully controlled. The natural history of the exotic species should be understood, so that maintenance staff and resource managers know whether materials added to the compost could actually spread exotic species. Care should be taken when seeds or fruits, and some cases, vegetative materials from exotic species are added to compost.

Public Health and Safety Concerns

Public health and safety concerns must be addressed throughout the entire solid waste operation. Collection of trash and recyclables presents many safety hazards to NPS employees involved in these operations. Public health concerns include health risks to employees, the need for vaccinations, hazards associated with medical wastes and siting considerations.

Collection of recyclables can be from unmanned containers, at collection centers, through curbside collection and by manual sorting of trash. Each of these methods exposes employees to similar hazards, such as cuts from broken glass and sharp metal, and ergonomic problems from improper lifting and handling of containers. Manual sorting of trash or sorting through recyclable materials contaminated with trash may result in puncture wounds from nails and needles, and exposure to chemical and biological hazards. Prevention of these hazards are discussed in this section.

Health Risks to Workers

There has been concern expressed about exposure to Hepatitis B and Acquired Immune Deficiency Syndrome (AIDS). Current public health information indicates that the health risks to trash collectors is no greater than for other nonhealth-related occupations.

The Hepatitis B and the AIDS virus are very fragile and survive or remain viable for a relatively short time in the environment. Should a worker become exposed to or possibly infected as a result of contact with improperly disposed needles, blood or body fluids, in a manner where the skin is abraded or broken, the employee must report such occurrence to the employee's supervisor for appropriate medical treatment or follow-up. All employee injuries or any potential exposure to the AIDS virus or Hepatitis B must be reported to the supervisor, and a Department of the Interior Form 134 (DI-134) must be filed. The National Park Service is investigating development of an immunization policy for Hepatitis B.

Recommended Personal Protection Equipment

All NPS employees involved in collection and separation of recyclables should wear appropriate gloves and safety shoes. Safety glasses should be worn when working around compactors or crushers, and hearing protection might be required at these operations if noise levels exceed the Occupational Safety and Health Administration (OSHA) regulations. All required personal protection equipment must be purchased by the park and replaced when necessary. Each type of personal protection equipment is discussed in this section:

1. **Hand Protection**. Hand protection should be worn by NPS employees to protect against cuts from broken glass and sharp objects, and puncture wounds from needles and nails.

   Since the critical factor in hand protection is that the glove be cut and puncture resistant, the following features are necessary: have a strong supporting fabric such as duck, nylon or aramid fiber; or be split leather throughout (although not necessarily for the gauntlet); or be split leather on at least the palms, fingers and knuckles. A recommended type of hand protection is a canvas gauntlet glove with a suede or leather palm, plus leather on the fingertips and across the knuckles.

   The following types of gloves are not recommended: ordinary cotton or latex gloves; gloves that do not "breathe" (natural rubber, neoprene or plastic, either unsupported or fully coated); gloves that have poor wet grip (smooth nitrile butyl rubber) and gloves that are not relatively impervious to common hazardous chemicals (cotton).

2. **Safety Shoes**. Safety shoes, with puncture-resistant soles and metatarsal guards, should be worn to prevent puncture wounds and to provide protection from dropping hazards. Deep-treaded soles are recommended to reduce slips and falls. Tennis shoes, dress shoes, sandals, etc., must not be worn.

3. **Eye Protection**. Eye protection and/or face shield must be worn when operating a compactor, incinerator or any other equipment that may eject glass, metal or other fragments. Safety glasses with cable temples or holding straps, plus side shields, should be used. Employees wearing prescription eye glasses should be required to have safety-type prescription lenses fitted into safety frames. Plastic goggles are not recommended because they may distort vision, scratch more readily and are hotter to wear.

4. **Hearing Protection**. Ear plugs or ear muffs must be worn by employees whenever the noise levels exceed the OSHA action level of 85 decibels, averaged over an 8-hour period. If this level is exceeded, employees must also be enrolled in a hearing conservation program which includes yearly audiograms and training (refer to Title 29 CFR Part 1910.95 for further details). Examples where noise levels may be exceeded include operation of compacting or crushing equipment and heavy duty vehicles.

5. **Optional Personal Protection Equipment**. Other personal protective equipment may be necessary in collection operations. Coveralls can provide additional skin protection from chemical and physical hazards. Hard hats, with chin straps, are recommended when garbage collection equipment has a descending hopper guard door or an elevating hopper. High visibility outer wear, such as bright yellow or orange raincoat or safety vest, is recommended to ensure that employees are seen by motorists during predawn or dusk hours or during bad weather. Rubber shoulder pads, hip pads and leggings help prevent bruises or cuts from edges of metal containers.

Siting of Storage Areas and Recycling Stations

Several types of storage areas may be required in the park to hold wastes for periodic pickup by contract recyclers or other refuse disposal entities. The storage, holding or transfer site should be fenced and located where pest nuisance and undesirable environmental impacts are minimized. Threatened or endangered species habitats, traditional points of congregation for wildlife, sensitive feeding or reproductive areas or areas of high public visitation for scenery are examples of locations to be avoided during siting.

Considerations for siting and maintaining a storage area include the following:

1. **Noise** - a storage area should be sited an adequate distance away from inhabited areas and/or furnished with appropriate sound attenuation devices to decrease noise levels.

2. **Electrical power** - a storage area needs electrical power for lighting, mechanical equipment, etc.

3. **Water supply** - water should be provided for wash down and for domestic use, if needed.

4. **All-weather vehicle access to site**, including consideration for weight and size of vehicles.

5. **Topography** of the site should be such that runoff will not cause problems offsite (adjacent lands or waterways).

6. **Covered storage areas** should be provided for the storage of equipment and recyclable materials (van type trailers or buildings).

7. **All storage containers** should have tight fitting lids, be watertight and animal proof.

8. **Aesthetics** - access roads, fencing and any buildings should be well designed and compatible with surrounding features.

9. **Cultural and environmental compliance** overview and actions must be complete before constructing any storage area.

Collection Equipment and Container Selection Considerations

Employee safety must be one of the most important factors when selecting collection equipment and containers. Ergonomic problems, such as injury to muscles, tendon, ligaments and the back, are a major concern.

Whenever possible, collection equipment should provide mechanical lifting and dumping. If this is not feasible, then containers, when full, should not exceed 50 pounds. If two or more people are used to lift a container, the container should not exceed 90 pounds when full. Whenever possible, carts and mechanical lifts should be used to assist in handling containers. Also, containers must have secure handles and be easy to handle.

The height that containers must be lifted is an important consideration. The easiest and safest lifting height is between knee and hip level. Above or below these points the collector is forced to use much more energy to move the same load and strain on the body is significantly greater. For this reason, containers handled manually should never be recessed below ground level and the loading sill height should be as low as practical. If sill height must be higher, consideration should be given to reducing the permissible load weight.

All employees involved in collection operations should be trained in correct lifting techniques. Whenever a back injury occurs, the incident must be reported (DI-134) and the employee must be counselled and perhaps retrained.

Puncture-proof containers must be used whenever glass or scrap metal is collected. Cardboard boxes, woven polypropylene bags that are puncture proof or heavy duty plastic containers can be used.

A word of caution about "high density" plastic bags which are being sold to collect trash in. Bags that make a crackling sound when handled are usually high density plastic. These bags may be described in the product literature as capable of "carrying 100 pounds," when in fact, the product will be entirely unsuitable for carrying much lighter loads which include sharp objects. These bags break easily when punctured by any sharp object. It is better to purchase low density bags for collecting trash that may include broken glass, branches, fish skeletons, etc.

Storage containers must have the capacity to be closed off to animals. Containers should prevent the entry of bears, raccoons, rodents and birds as appropriate. Containers should also be sealed when possible to prevent the entrance of invertebrates that may become pests. Species such as cockroaches, wasps, bees and ants may be attracted to the residues in beverage containers stored at recycling centers. Cleanliness should be maintained where possible. When pest problems occur, Integrated Pest Management procedures must be used.

Operational Procedures Considerations

Unless facilities for separation of recyclable materials are provided, workers should not attempt sorting through mixed recyclables/garbage. Recyclables contaminated with significant amounts of wet garbage or nonrecyclables should be treated as nonrecyclable wastes. The preferred method of waste sorting is at the source, rather than at an intermediate sorting location.

Medical and Animal Research Wastes and Sharps Disposal

Medical wastes are defined in Title 40 CFR Part 259.30(a) and include cultures and stocks, pathological waste, human blood and blood products, used and unused sharps, animal waste (carcasses, body parts and bedding known to have been exposed to infective agents during research), isolation wastes and other wastes such as unregulated wastes which create a risk of disease transmissions, mixed medical and nonhazardous solid waste. Such wastes should be kept separate from the municipal waste stream and be disposed of in a manner and at locations approved for the disposal of medical wastes. At locations where medical wastes are generated, a written disposal plan should be developed, maintained and followed.

Administrative Actions and Procedures

This section is meant to be a "how to" guide to Superintendents, administrative officers, maintenance chiefs and others responsible for procuring services and products, for reuse of products where feasible and for disposing of solid waste products.

How do we show our commitment to ISWAP? For example, how can we buy recycled paper when it is not in the GSA Catalog? How can we recover proceeds from the sale of recycled aluminum and plastic containers and use revenues to defray the cost of the program? How can we solicit the aid of communities, organizations and private companies to help recycle?

Purchasing Recyclables

Where practical and cost-effective, parks and offices should procure recycled products in preference to items composed of nonrecycled materials. NPS units should consider all facets of products before making purchases. For example, many establishments have substituted plastic food and beverage containers with paper. This is not a solution to the problem because any paper contaminated with food or lined with wax or plastic cannot be recycled at this time, but plastic can be recycled.

Each regional office should evaluate potential demand for recycled or reusable products and consolidate requirements with the goal of establishing a reliable supply at a fair and reasonable price. Where a significant and continuing demand is anticipated, such information should be referred to WASO Administrative Services Division (230) for possible development of a servicewide or GSA contract.

Current EPA draft legislation on Pollution Prevention proposes that federal agencies procure items composed of the highest percentage of recovered materials. GSA is working closely with EPA to provide such items on its federal procurement schedule.

Procurement officials at each park and office should develop and maintain a high level of awareness of the availability of recycled and reusable products, both from mandatory sources and the competitive open market. Purchasing agents should keep their knowledge current by carefully monitoring the flow of information from all sources. The following are a few of the alternatives available to you:

1. Screening of GSA's introductory new product schedules.

2. Monitoring the GSA publication "Market Tips," which presents information on initiatives of the Federal Supply Service.

3. Screening GSA Federal Supply Service contracts, some of which may include listings of recycled products.

4. Reviewing vendor catalogs, which may provide the most current information available.

What if a recycled or reusable product is not available under a regionwide, servicewide or GSA contract or from another mandatory source? In such a case, your park or office may acquire the product through competitive open market procedures, provided the price is fair and reasonable and other procurement requirements are met.

Consideration should be given to overall cost and to overall benefit to the government in making such procurement decisions.

Staff involved in the procurement process (e.g., maintenance and procurement personnel) should become familiar with characteristics of the various types of products entering the solid waste stream. (Refer to Appendix G of this document for examples.)

Procuring Services to Remove Solid Waste

Plan thoroughly, and far in advance, for procurement of services involving removal or processing of solid waste. Keep in mind that Service Contract Act wage rates will apply to procurement of services costing $2,500 or more. Items you should consider are as follows:

1. Allow three months for Department of Labor to provide wage rates since they are needed before the solicitation is issued.

2. Allow the customary time for solicitation of quotations, bids or offers, evaluation of same and award of the purchase order or contract; consult your procurement office for details.

3. Consider, carefully, all the requirements and conditions you may want to include in your contract for solid waste removal.

The scope of work for one workable solid waste removal contract is included in Appendix D.

Recovering Recyclables/Reusables

Preference should be given to disposal arrangements which provide for removing recyclable/reusable products from the solid waste stream. A wide array of arrangements for recovering products is possible. Options for recovering recyclables/reusables may include action by contractors, concessioners, cooperating associations, the park itself, or, under appropriate conditions, by others.

Concessions: In larger parks, the most natural means of recovering products is through concessions, under either informal or contractual arrangements. This means has been especially successful at Yosemite National Park, where the Yosemite Park and Curry Company operates a highly successful program. (This program is described in detail in Appendix E.) The concession arrangement should provide for a commensurate benefit to the park.

Cooperating Associations: In appropriate circumstances, these organizations may be interested in conducting programs to recover recyclable/reusable products from the solid waste stream. Ordinarily this would occur where the park has no concessioner or where the concessioner is not interested in participating. Again, the arrangement with the cooperating association should provide for a commensurate benefit to the park.

Parks: Where feasible, Superintendents should establish mechanisms for recovering recyclable/reusable products from the solid waste stream.

Ordinarily proceeds from sale of government-owned property must be deposited in the miscellaneous receipts of the U.S. Treasury. Items donated by park visitors, however (such as aluminum and plastic containers), may be sold and the proceeds retained in the park's donation account. It must be clear that the visitor intends the donation to be used for park operations. For example, at campground stations, visitor centers and other central locations establish an "Aluminum Can Donation Box," further identified by the legend, "Proceeds from your donation will be used for..."(specify your program).

(Refer to the Staff Directive on donations for further guidance on processing donations.)

Others: Parks should also look for opportunities to have surplus materials picked up by recyclers as a donated service. An example may be an individual who, at no cost to the government, picks up waste motor oil or used tires once a month. All responsibilities and obligations should be documented in a written agreement. The kind of documentation necessary is largely dependent on the complexity and the conditions of the activity being covered. Either a memorandum of understanding (MOU) or a memorandum of agreement (MOA) may be used. However, in some instances, a letter, outlining the terms and conditions that are agreed to, may be adequate. The type and content of the written agreement should be reviewed by a representative of the Regional Solicitor's Office.

A solid waste disposal contractor operating under a fixed-priced contract may elect to remove and sell recyclables and retain the proceeds. In some instances, however, a cost-reimbursable contractor or cooperator may recover recyclables in connection with a project for which the person is responsible. When such action is anticipated, the contract or cooperative agreement should include language to provide for addressing program income, either by offsetting project costs or by other authorized means specified in the Federal Acquisition Regulation or in the appropriate Office of Management and Budget Circular.

In other cases (carefully defined in NPS-20, Guideline on Cooperative Agreements), a cooperative agreement governs the NPS relationship with a cooperator. A cooperative agreement is an assistance instrument which must:

1. Be authorized by program statute, such as the National Trails Systems Act;

   (Note that legislation defining cooperative agreements does not alone confer authority to undertake the project.)

2. Obligate funds to implement a *bona fide* assistance relationship on the part of the government (not merely procuring a service for the government);

   Such assistance must be intended to accomplish a public purpose of support or stimulation authorized by statute;

3. Include substantial involvement of the government in managing the project as defined in NPS-20; and

4. Be signed by a warranted contracting officer.

Another option is for the vendor to accept for recycling the used product being replaced (i.e. tires, batteries). A statement could be added to the purchasing document to this effect. For example, trade old tires for new tires as a term of purchase.

Chapter 7. Waste Combustion

A growing option for reducing solid waste is the use of waste-to-energy (WTE) facilities. These plants incinerate trash to generate steam or electricity, while reducing the volume of solid waste by 70-90%. Today, approximately 150 operational waste combustion facilities process some 13% of the Nation's municipal solid waste. Predictions indicate that 25% of our waste will eventually be processed in WTE incinerators.

Park managers need to understand some basics about this technology in case a plant is located or proposed near your park and because of its increasing role in minimizing solid waste going to landfills. Our Management Policy also states that incineration as a means of solid waste disposal will be used only if there is no other feasible alternative.

The following three types of plants convert waste into energy:

1. **Mass Burn**: The mass burn is the most common plant. Waste is burned as it is delivered to the plant, without processing or separation. Mass burn can be sized to handle as much as 3,000 tons of refuse per day. Some mass burn plants remove metals from the ash for recycling.

2. **Modular Combustion Units**: Modular incinerators are, for the most part, simply small mass burn plants with capacity from 25 - 300 tons per day. The facilities are commonly used in rural, small communities.

3. **Refuse Derived Fuel (RDF)**: RDF plants process the waste before burning. Typically, noncombustible items, such as glass and metal, are removed for recycling, and the remaining waste is shredded into uniform size for combustion.

Compatible with Recycling

The WTE option is compatible with recycling, composting and other program components. Monetary savings from reducing the amount of waste to be burned can be considerable. Recycling and composting may improve efficiency of WTE plants by removing glass, metal and yard waste which do not burn well, if at all.

As part of the proposed Source Performance Standards, the Environmental Protection Agency has proposed that all existing and future WTE plants be required to recycle 25% of the waste stream prior to combustion, a maximum of 10% of that can be composted.

WTE Pollution Issues

Like landfills, the development of WTE plants has been hindered by siting controversies. Considerable controversy exists regarding the risks associated with the air emissions and ash disposal of WTE facilities.

Modern WTE plants need not be the same as the incinerators of 20 years ago. They use trash as a valuable fuel to produce steam and electricity which is often sold to the host community for residential use. However, state-of-the-art devices must be employed to protect the air and land from adverse environmental effects.

Of course, these facilities require careful monitoring and plants that are not built with best available control technology have been known polluters. The Service should be involved in permitting decisions for WTE facilities.

WTE incinerators can produce a number of pollutants, including carbon monoxide, sulfur dioxide, dioxins and fine particles containing heavy metal compounds. Many pollutants, such as dioxin, are formed as a result of incomplete combustion.
By maintaining very high temperatures (1500 degrees Fahrenheit) during combustion most compounds are destroyed. Any remaining pollutants can be captured in the following emission control devices:

1. **Dry Scrubbers**: These devices "wash" particulate matter gases by injecting a lime slurry. A dry powder is produced which is collected with the fly ash in electrostatic participators. The captured material becomes part of the ash.

2. **Electrostatic Participators (ESP)**: These devices use high voltage to negatively charge incoming dust particles which are then collected on positively charged plates. ESP are documented as removing 98% of particulates, including heavy metals, and are more commonly used as WTE air pollution control devices.

3. **Fabric Filters or Baghouses**: These devices consist of hundreds of long fabric bags made of heat-resistant material in an enclosed housing which filters particles from the gas stream. Fabric filters are able to trap fine, respirable particles.

Stack height is an extra precaution taken to ensure that any remaining pollutants do not reach the ground in a concentrated area. Stacks being built today are 200-300 feet - twice as high as stacks on older incinerators. All stacks however may add to long-range transport of sulfur dioxide emissions that are precursors to acid rain.

Ash Management

Ash management is also an often controversial issue related to WTE facilities. As previously mentioned, waste is reduced by 70-90% in a WTE facility, leaving 10-30% of the original volume in the form of ash, which must be disposed of in a landfill.

Many noncombustible materials are found in WTE ash. The presence of heavy metals, particularly lead and cadmium, is a primary concern. Lead acid batteries contribute up to 65% of the lead in municipal solid waste and household batteries contribute 52% of the cadmium in MSW ash (U.S. Environmental Protection Agency 1988). Removing these materials from the waste stream for recycling can greatly reduce the heavy metals in the ash.

The greatest concern with ash is proper disposal and the potential for harmful substance in the ash to be released into the ground water.

The Environmental Protection Agency offers draft guidelines for handling ash including

- ash containers and transport vehicles be leak-tight.
- ground water monitoring be performed at ash disposal sites.
- liners be used at all ash disposal facilities.

The Environmental Protection Agency has not yet decided whether municipal solid waste incinerator ash should be treated as a toxic waste.

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Chapter 8. Landfills

Disposing of solid waste in landfills is one element of solid waste management. Poorly designed and operated landfills pose significant threats to the environment, and ultimately, to human health. Such landfills, at best, may be eyesores. At worst, they contaminate ground and surface water, encourage pests and create nuisances like odor and blowing litter.

Congress enacted the Solid Waste Disposal Act in 1965 to initiate landfill controls in the United States. Congress also enacted the Resource Conservation and Recovery Act (RCRA) in 1972 that superseded and incorporated the provisions of the Solid Waste Disposal Act. The Environmental Protection Agency administers both of these acts.

The key provisions of federal law place primary responsibility for managing landfills with state governments. Each state is required to develop a plan for solid waste management. RCRA requires that each state's solid waste management plan prohibits open dumps; thus, RCRA brought to an end the more offensive practices common in past landfills.

New Landfills

Operated by non-NPS Parties

In 1984, Congress prohibited new landfills within the boundary of any unit of the National Park System except if that landfill disposes of solid waste generated solely from sources within the unit boundary, and then, only if no degradation of natural and cultural resources would result. This prohibition applies to landfills proposed by non-NPS parties on all lands within the National Park System, including nonfederal lands. The law is codified at 16 *United States Code* (U.S.C.) 4601-22.

The Park Service will subject any proposal to create a new landfill within a unit boundary to the closest scrutiny. Only the Director may approve such a proposal and only after the completion of an Environmental Impact Statement. Prior to expanding a landfill in a park, NEPA and other compliance requirements must be satisfied.

Operated by National Park Service

The 1984 Act that prohibits new landfills in National Park System units also applies to landfills that the Service may propose to establish or expand. Thus, the Park Service will establish, or expand, new sanitary landfills in park units only where such landfills dispose of solid waste generated solely from within the unit, and then, only if the landfill does not degrade the park's natural or cultural resources.

In addition to the standards prescribed in law, the Service will not establish or expand an existing landfill if there is a practical alternative, such as transporting the waste out of the park.

The National Park Service will prepare an Environmental Impact Statement for each proposal to establish or expand an existing sanitary landfill operated by the National Park Service.

Existing Landfills

Operated by non-NPS Parties

Landfills operated by non-NPS parties already exist in several units of the National Park System. Some are on nonfederal lands within a unit; others are on federal lands within a unit. The landfills on federal lands result from agreements made as a condition of land acquisition.

The Director may allow an existing landfill to continue to operate under regulations the Park Service will soon adopt to mitigate the adverse effects of such landfills.

The Service intends that existing landfills operated by others will cease operations when the capacity of the landfill, as specified in the permit, is reached. The permit is that instrument under which the landfill was operating as of September 1, 1984. Any proposal by an existing landfill to continue operations by expanding its capacity, either horizontally or vertically, will be treated as a proposal for a new landfill and must meet the standards applicable to new landfills.

Where federal lands are involved, the Park Service will not permit the existing landfill to operate beyond the date agreed to as a condition of the NPS's acquisition of the tract.

Operated by National Park Service

The National Park Service operates landfills in several units. NPS-operated landfills are governed by the federal regulations at Title 40 CFR Parts 241 and 257. The Environmental Protection Agency will soon adopt new regulations at Part 258 that will greatly complicate the task and increase the cost of operating a landfill. In addition, state solid waste regulations, when approved by the EPA, will also apply.

The regulations at Title 40 CFR Part 241 prescribe required standards that govern NPS-operated landfills. The regulations also list recommended procedures for such landfills. The Service, to the greatest extent practicable, will adopt the landfill procedures recommended in the regulations. For existing NPS-operated landfills, the Park Service will not use it to dispose of any solid waste generated from sources outside the unit.

Chapter 9. Community Outreach Program

A community outreach program, visitor information and education on solid waste issues are important program components. This outreach can provide the necessary information and education that will result in greater support and involvement by the public for solving the solid waste management issues facing our Nation.

Parks should also form a partnership with local, state and federal agencies and private organizations to promote sound solid waste management practices both inside and outside National Park System units.

When starting a community outreach program, first check with community leaders to determine what kind of solid waste management program they have or what they are planning. Leaders to consider contacting include the Mayor, Public Works Director, City Manager or Administrator, town council, county supervisors or perhaps the community Keep America Beautiful coordinator.

Different options are available depending on whether your community has a solid waste management program. These options are discussed in the following sections.

Options If Your Community has Program

If your community has a solid waste program, the following options should be considered:

1. If the community has a waste management\recycling committee, ask to become a member.

2. Examine the community program to determine how the park's solid waste management program can enhance, extend or augment the community program. Be careful not to give the impression that the community program is not adequate. Also determine if any part of the community program could serve as a model for or enhance your park's program.

3. Design the park's program to be compatible with the community program. Involve the community in planning and implementing the park's program.

4. Inform park visitors, with prearrival and onsite materials, of the community/park waste management program and request their support and participation.

5. Develop an in-car litter bag containing logo and information on the community/park program to distribute to community members, park employees and visitors.

6. Encourage joint community/park projects, such as trail restoration, litter cleanup, public awareness, adopt-a-site, etc.

Options if Your Community does not have Program

If your community does not have a solid waste management/recycling program in the planning stage consider the following options:

1. Meet with community officials and advise them of your intentions and your solid waste management program.

2. Invite the community to participate at whatever level they would like (full partner, voluntary drop-off center, etc.).

3. Keep the community informed as the program is implemented. Emphasize positive aspects, dollar savings, public acceptance, benefits to the environment, i.e. space and energy saved, etc. Keep invitation to participate open.

4. Involve local organized youth groups and volunteers in project. Conduct special programs on recycling in local schools and other public forums. Use local media, employee newsletters of local industry and business, civic organizations, churches, etc., to carry message.

5. Offer to be an information source on waste management/recycling for community to help them get started.

6. Hold special open house for community to see the park program in operation. Provide materials, tours, discussions, etc.

7. Develop and use special exhibits on the park's program at county fairs, shopping malls and other community gathering places.

Visitor Information/Education Program

To begin a visitor information/education program, prepare and provide to visitors onsite information on your park's solid waste management program. This information should cover what you are doing and why. Use specific examples that will help visitors to understand what is going on, why it is necessary and how they can help us.

Options you could use to inform your visitors include the following:

1. Work with the travel and tourism industry to get the above information to visitors before they reach the park.

2. Use recycled products whenever possible in park operations and identify these items as made from recycled materials, so visitors will see the end product of the effort.

3. Prepare special literature for children that explains recycling, why it is important and what the standard recycling logo looks like.

4. Develop basic interpretive messages on the "what and why" of the park's program for use in evening interpretive programs, guided walks and other park interpretive activities.

5. Ensure that all park and concessioner employees and other park residents understand the program, and that the information is included in the orientation materials for new employees.

6. Use publications, such as park newspapers or magazines, employee newsletters, park information folders, hotel/motel/lodge information folders/fliers, ticketron inserts, or the reverse of park entry receipts, to get the message out.

7. Use audiovisual programs like your park radio station; concessioners close circuit television; visitor center slide show or video presentation; local area radio and television network public service announcements; radio and television interviews/talk shows; media tours of your park; and feature articles in local, regional or special-interest magazines and newspapers.

8. Develop other visual messages like podium-style wayside exhibits, storyboards for campground bulletin boards, posters for shuttle buses, road signs indicating recycling containers, information printed on gift shop bags and signs in restrooms.

9. Develop specific freestanding exhibits for your visitor center or museum, or for display in your hotel/motel/lodge lobby.

Chapter 10. Working with Others

Concessioners, Cooperating Associations and Other Contractors

Concessioners, cooperating associations and other contractors must comply with solid waste management practices established for the park in which they operate and must otherwise cooperate with the National Park Service to reduce solid waste; promote use of environmentally compatible materials; educate park visitors, employees and residents on good waste management practices and actively assist in implementing and promoting the NPS ISWAP.

Concessioners, cooperating associations and other contractors operating within NPS areas must, to the extent possible,

1. Seek source reduction through informed purchasing methods. (Refer to Chapter 5 and 6 for suggestions.)
2. Encourage their purveyors to supply reusable and/or recyclable containers.
3. Facilitate maximum recycling.
4. Encourage employees to practice good waste management while on the job and at home.
5. Cooperate with other park entities and local communities in developing recycling programs and other alternative disposal methods.
6. Keep abreast of and share new waste management technologies with park management, community entities and other concessioners.
7. Develop statistical data on waste reduction and recycling.
8. Maximize use of reusable products in lieu of single-service items.
9. Participate in interpretative programs regarding waste management.
10. Participate in park and adjacent area litter prevention campaigns.
11. Develop materials and literature to promote and explain waste management programs to visitors, employees, contractors and the local community.

EPA Beverage Container Program

Concessioners, cooperating associations and other contractors operating on federal lands are required to comply with *Solid Waste Management Guidelines For Beverage Containers* found in 40 CFR Part 244 and NPS-48, Concessions Guideline, Chapter 33. The EPA guideline requires that a deposit be placed on containers for carbonated beverages. NPS-48 requires t' at a deposit be placed on all containers regardless of type of beverage. Both guidelines require that containers be marked to show that they are returnable and the refund value. Vendors are required to recycle beverage containers that are returned, where markets are available.

Even in urban areas or in other special situations where container deposit is not practical due to transient consumers and returns are not provided outside of park boundaries, options to recycle are still available. If there is a market for recyclable containers in the area, an in-park collections(s) should be provided to encourage the return of beverage containers for recycling purposes.

Although this is a mandatory program, an exception may be obtained. Exceptions exist for small outlets or unattended vending machines. When an individual National Park System unit decides not to implement the program on all or some of its carbonated beverage containers, that unit must prepare a nonimplementation report for the Environmental Protection Agency (see 40 CFR 244.100 (f)(3) for the contents of that report).

Appendix F contains the complete text of EPA Beverage Regulations and NPS-48 Concession Guideline, Chapter 33.

In an effort to maximize the return rate and subsequent recycling and reuse of beverage containers, the following procedures are suggested for implementing in whole or in part, where practical:

1. Reexamine the current situation to determine if implementation is now feasible where a determination was previously made not to implement the guidelines due to local conditions.
2. Establish a deposit/refund on all beverages, except milk, held in glass, metal or plastic containers.
3. Adjust the deposit/refund amount upward if the container return rate is low (-50%).
4. Direct a percentage of the profits, if any, from this program to other waste management or other environmental projects.
5. In-park operators accept for refund at a reduced amount containers that they had not sold or collected a deposit.

6. Provide wider notice and publicity advertising the beverage refund program.

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Appendix A.
Special Directive on NPS Solid Waste Management Policy

Special Directive 91-1 Annual Review

To: Regional Directors, Managers, Harpers Ferry and Denver Service Centers and Appalachian National Scenic Trail

From: ACTING Director

Subject: Implementation of the Integrated Solid Waste Alternative Program (ISWAP)

Although the support for recycling, waste minimization and other environmental actions have increased over the past recent years, our nation still has a long way to go to optimize the sound management of solid waste. The American population produces 160 million tons of solid waste every year, which averages more than 3 pounds per person each day. One-third of the nation's landfills will be full by 1993. Because most of our solid wastes are taken to community landfills, the coming lack of landfill space directly affects our operation. In many areas, we are already feeling its effect as reflected in higher disposal costs.

The answer to this major problem is not in the siting of additional landfills, but in the reduction of solid waste generation and maximizing recycling efforts. As a generator of and contributor to the solid waste problem, the National Park Service (NPS) has long also recognized its responsibility to be good stewards in preserving our resources. Assuming a leadership role in the Federal sector, NPS has developed a Servicewide Integrated Solid Waste Management Program that embraces source reduction, recycling, using recycled products, community outreach and interpretive efforts.

I am requesting each Regional Director to implement the attached NPS Integrated Solid Waste Alternative Program. Due to the varying operations and site locations throughout the NPS, mandating **every** element of the program is not feasible. Rather, each unit manager is encouraged to embrace and implement all applicable actions. For example, a park may not be able to recycle because of insufficient waste generation or because of logistical reasons; however, the park can practice source reduction or develop an interpretive program. Visitors have often written commenting on how a recycling or interpretive effort they have seen at a park has spurred them to become advocates in their local communities.

Independently each park's efforts may not appear to make much difference on the national scope. But, through each park unit's maximizing the implementation of ISWAP, collectively, we will make great strides in solving our solid waste dilemma.

Attachment

Appendix B.
Suggestions for Source Reduction

Reusables

- Use washable coffee cups or mugs instead of single service.
- Reuse scrap paper and Xerox rejects for telephone messages, notes, packaging, ... before recycling.
- Copy on both sides of paper, drafts and final copies.
- Use rechargeable batteries.
- Composting lawn trimmings, tree branches, etc.

Maintenance

- Proper maintenance/operation of equipment will extend its useful life and delay disposal.
- Proper inflation/rotation/balancing of tires will extend their useful life.
- Use service contracts to maintain efficient operation of equipment.

Purchasing

- Purchase products with reduced packaging.
- Purchase for lowest lifetime cost not just initial cost.
- Purchase in bulk but buy only what is needed or will be used within a reasonable time.
- Excess or surplus unneeded items.
- Purchase copiers which copy on both sides.
- Purchase reusable products rather than disposable.
- Purchase efficient equipment.

Reduction or Elimination of Use

- Use computer monitor for rough drafting, if final draft or originals have only obvious minor errors don't polish.
- Use electronic transfer for information
- Reduce the use of paper for routine or repetitive messages by using chalkboard or bulletin board for messages.

Alternatives

- Use less toxic or nontoxic materials.

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Appendix C.
List of State Solid and Hazardous Waste Agencies

ALABAMA

AL Department of Environmental
Management
1751 Federal Drive
Montgomery, AL 36130

205/271-7730

ALASKA

AK Department of Environmental
Conservation
Division of Environmental Quality
PO Box O
Juneau, AK 99801

907/465-2666

AMERICAN SAMOA

Environmental Quality Commission
Solid Waste Division
Government of American Samoa
Pago Pago, American Samoa 96799

Overseas Operator Commercial Call:
6984

ARKANSAS

AR Solid Waste Division
AR Department of
Pollution Control and
Ecology
Little Rock, AR 72219

501/562-7444 Ext. 504

CALIFORNIA

CA Department of Health
Services
PO Box 942732
400 P Street
Sacramento, CA 95814

916/323-2913

COLORADO

Waste Management Division
Colorado Department of
Health
4210 E. 11th Avenue
Denver, CO 80220

303/331-4830

ARIZONA

Office of Waste and Water
Quality Management
AZ Department of Environmental
Quality
2005 N. Central Avenue, Room 304
Phoenix, AZ 85004

602/257-2305

CONNECTICUT

Hazardous Material Management
Unit
Department of Environmental
Protection
State Office Building
165 Capitol Avenue
Hartford, Connecticut 06106

203/566-4924

DELAWARE

Division of Air & Waste
Management
Department of Natural Resources
and Environmental Control
PO Box 1401
89 Kings Highway
Dover, DE 19903

302/736-3672

COMMONWEALTH OF NORTHERN MARIANA ISLANDS

Division of Environmental
Quality
Department of Public
Health and Environmental
Services

Commonwealth of the
Northern Mariana Islands
Office of the Governor
Saipan, Mariana Island
96950

Overseas Operator: 6984

GEORGIA

Land Protection Branch
Industrial and Hazardous
Waste Management Program
Floyd Towers East/Rm. 1154
205 Butler Street, SE
Atlanta, GA 30334

404/656-2833

GUAM

Solid Waste Management
Program
Guam Environmental
Protection Agency
PO Box 2999
Agana, GU 96910

671/646-8863

DISTRICT OF COLUMBIA

Solid Waste Division
Department of Consumer and
Regulatory Affairs
5010 Overlook Ave., S.W.
Room 114
Washington, DC 20032

202/783-3194

FLORIDA

Division of Waste Management
Department of Environmental
Regulations
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

904/488-0190

ILLINOIS

IL Environmental Protection
Agency
Division of Land Pollution
Control
2200 Churchill Road
Springfield, IL

217/782-6760

INDIANA

IN Department of Environmental
Management
105 S. Meridian Street
PO Box 6015
Indianapolis, IN 46225

317/232-3210

HAWAII

Department of Health
Solid Waste Program
PO Box 3378
Honolulu, HI 96801

808/548-2270

IDAHO

Hazardous Materials Bureau
Department of Health and
Welfare
Idaho State House
450 W. State Street
Boise, ID 83720

208/334-5879

KENTUCKY

Division of Waste
Management
Department of Health and
Environment
Forbes Field, Building 321
Topeka, KA 66620

913/862-9360 Ext 290

LOUISIANA

Office of Solid Waste and
Hazardous Waste
Solid Waste Division
LA Department of
Environmental Quality
PO Box 44307
625 N. 4th Street
Baton Rouge, LA 70804
504/342-9070

IOWA

Air Quality & Solid Waste
Protection
Department of Water, Air &
Waste Management
900 East Grand Avenue
Henry A. Wallace Building
Des Moines, IO 50319-0034

KANSAS

Bureau of Waste Management
Department of Health and
Environment
Forbes Field, Building 321
Topeka, KA 66620

913/862-9360 Ext. 290

MASSACHUSETTS

Division of Solid and
Hazardous Waste
MA Department of
Environmental Quality
Engineering
One Winter Street, 5th Floor
Boston, MA 02108

617/292-5589

MAINE

Bureau of Oil and
Hazardous Material
Control
Department of
Environmental Protection
State House Station #17
Augusta, ME 04333

207/289-2651

MARYLAND

Hazardous and Solid Waste
Management Administration
MD Department of the
Environment
201 Preston Street,
Room 212
Baltimore, MD 21201

301/255-5647

MISSOURI

Waste Management Program
Department of Natural
Resources
Jefferson Building
205 Jefferson Street
13/14th Floor
PO Box 176
Jefferson City, MO 65102

314/751-3176

MICHIGAN

Waste Management Division
Environmental Protection Bureau
Department of Natural Resources
Box 30030
Lansing, MI 48909

517/373-2730

MINNESOTA

Solid and Hazardous Waste
Division
MN Pollution Control
Agency
520 Lafayette Road, North
St. Paul, MN 55155

612/296-7282

MISSISSIPPI

Division of Solid and Waste
Managment
Bureau of Pollution Control
Department of Natural
Resources
PO Box 10385
Jackson, Mississippi 39209

601/961-5062

MONTANA

Solid and Hazardous Waste
Bureau
Department of Health and
Environmental Sciences
Cogswell Bldg., Room B-201
Helana, MT 59620

406/444-2821

NEBRASKA

Solid Waste Management
Section
Department of
Environmental Control
State House Station
PO Box 94877

402/471-2186

NEVADA

Waste Management Program
Division of Environmental
Protection
Department of Conservation
and Natural Resources
Capitol Complex
201 South Fall Street
Carson City, NV 89770

702/885-4670

NEW HAMPSHIRE

Division of Public Health
Services
Office of Waste Management
Department of Health and
Welfare
Health and Welfare Building
6 Hazen Drive
Concord, New Hampshire 03301

603/271-4662

NEW JERSEY

Division of HQ Waste
Management
Department of Environmental
Protection
401 East State St./CN 028
New Jersey 08625

609/292-1250

NEW MEXICO

Solid Waste Bureau
Environmental Improvement
Division
NM Health and
Environment Department
PO Box 968
Santa Fe, NM 87504-0968

505/827-2924

NORTH CAROLINA

Solid and Hazardous Waste
Management Branch
Division of Health
Services
Department of Human
Resources
PO Box 2091
Raleigh, NC 27602

919/733-2178

NORTH DAKOTA

Division of Solid Waste
Management and Special
Studies
Department of Health
1200 Missouri Ave, Rm 302
Bismark, ND 58502-5520

701/224-2366

OHIO

Division of Solid and
Hazardous Waste
OH Environmental
Protection Agency
1800 Watermark Drive
PO Box 1049
Columbus, OH 43266-0149

614/466-7220

NEW YORK

Division of Hazardous
Substance Regulation
Department of
Environmental Conservation
50 Wolfe Road, Room 209
Albany NY 12233

518/457-6603

OREGON

Hazardous and Solid Waste
Division
Department of Environmental
Quality
811 Southwest 6th Avenue
Portland, OR 97204

503/229-5356

PENNSYLVANIA

Bureau of Waste Management
PA Department of
Environmental Resources
PO Box 2063
Fulton Building
Harrisburg, PA 17120

717/787-9870

PUERTO RICO

Environmental Quality Board
Santurce, PR 00910-1488

809/722-0439

OKLAHOMA

Waste Management Service
OK State Department of
Health
PO Box 53551
1000 Northeast 10th Street
Oklahoma City, OK 73152

405/271-5338

SOUTH CAROLINA

Bureau of Solid Waste
Management
Department of Health
and Environmental Control
2600 Bull Street
Columbia, SC

803/758-5681 or 803/758-5681

SOUTH DAKOTA

Office of Air Quality
and Solid Waste
Department of Water and
Natural Resources
523 E. Capitol
Foss Building, Room 416
Pierre, SD 57501

605/773-3153

TENNESSEE

Division of Solid Waste
Management
TN Department of Public
Health
701 Broadway
Custom House, 4th Floor
Nashville, TN 37219-5403
615-741-3424

RHODE ISLAND

Solid Waste Management Program
Department of Environmental
Management
204 Canon Building
75 Davis Street
Providence, RI 02908

401/277-2797

UTAH

Bureau of Solid and
Hazardous Waste Management
Department of Health
PO Box 16700
288 North 1460 West Street
Salt Lake City, UT 84116-0700

801/533-4145

VERMONT

Waste Management Division
Agency of Environmental
Conservation
103 South Main Street
Waterbury, VT 05676

802/244-8702

VIRGIN ISLANDS

Department of Conservation
and Cultural Affairs
PO Box 4399, Charlotte
St. Thomas, VI 00801

809/774-6420

TEXAS

Hazardous and Solid Waste
Division
TX Water Commission
PO Box 13087
Capitol Station
Austin, TX 78711-3087

512-463-7760

WASHINGTON

Solid and Hazardous Waste
Management Division
Department of Ecology
Mail Stop: PV-11
Olympia, WA 98504

206/459-6316

WEST VIRGINIA

Waste Management Division
Department of WV Natural
Resources
1260 Greenbrier Street
Charleston, WV 25311

304/348-5935

WISCONSIN

Bureau of Solid Waste
Department of Natural
Resources
PO Box 7921
Madison, WI 53707

608/266-1327

VIRGINIA

Division of Technical Service
VA Department of Waste
Management
Monroe Building, 11th Floor
101 North 14th Street
Richmond, VA 23219

804/225-2667

WYOMING

Solid Waste Management
Program
State of WY
Department of
Environmental Quality
122 West 25th Street
Herschler Building
Cheyenne, WY 82002

307/777-7752

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Appendix D.
Example of Solid Waste Contract Solicitation

This document was provided by Ozark National Scenic Riverways and is meant to provide an example of a solid waste contract. In the development of its own solid waste contact, each site should develop language that reflects the requirements of the specific sites.

STATEMENT OF WORK

REFUSE COLLECTION AND DISPOSAL

OZARK NATIONAL SCENIC RIVERWAYS

SPECIAL PROVISIONS

SP-01 SCOPE:

This service involves furnishing all facilities labor materials and equipment necessary for the collection and disposal of refuse in Ozark National Scenic Riverways. As described under the provision and terms of this contract, the Contractor is responsible for the collection of refuse, according to the stated pick-up schedule, and disposal at a licensed sanitary landfill site meeting Federal and State sanitary landfill standards. This site to be located outside of Ozark National Scenic Riverways boundaries. On the bid opening date, the Contractor will be required to furnish evidence that landfill sites is state approved.

SP-02 DEFINITIONS:

a. Refuse - anything thrown away or rejected as worthless or useless including garbage, rubbish, ashes (completely burned and cooled to the touch), street cleanings, solid market and industrial wastes.

b. Garbage - decaying or offensive animal vegetable wastes resulting from handling, preparation, cooking and consumption of food.

c. Rubbish - solid wastes consisting of both combustible and non-combustible wastes such as paper, cardboard, tin cans, yard clippings, wood, glass, bedding, crockery, and similar materials.

d. Containers - an approved, closable receptacle for the temporary retention of refuse. size of containers shall be 6 cubic yards and must be safe in construction so as to conform to Consumer Product Safety Commission standards. Unsafe bins will not be accepted in the Park.

e. Disposal - complete, permanent, and irretrievable removal of refuse from Ozark National Scenic Riverways to a sanitary landfill approved by the Contracting Officer.

SP-03 SAFETY:

The Contractor shall conduct his operations, including those involving machinery and self-propelled vehicles and equipment, so as to prevent accident, injuries, and damages; shall observe all pertinent provisions of the Occupational Safety and Health Act (OSHA); and shall otherwise furnish and employe such additional safeguards, safety devices, protective equipment and measures, and fire preventive and suppressive measures and equipment as the Contracting Officer may require for the protection of property, life, and health of the personal or parties involved.

The Contractor shall immediately notify the Superintendent or his representative of all accidents and fires arising out of, and in the course of work under this contract resulting in death, occupational disease, or injury requiring medical attention or causing loss of time from work or less or damage to property of the Contractor, the public or the Government. This record shall be transmitted to the Government on appropriate forms obtainable from the Superintendent.

Nothing in this provision shall be construed to relieve the Contractor from compliance with applicable state and local safety, health, and sanitation laws.

SP-04 SUBCONTRACTS AND OFFICIALS:

The Contractor will be as fully responsible to the Government for the acts and omissions of his subcontractors, and of the persons directly or indirectly employed by then, as he is for the acts and omissions of persons directly employed by him. Nothing contained in the subcontract documents shall create any contractual relationship between any subcontractor and the Government.

The number and specifications of contractor personnel shall be adequate to perform the work efficiently and maintain the required standards. Workers whom the Contracting Officer finds incompetent, disorderly, or otherwise detrimental to the best interest of the Government may be relieved and dismissed from the Park, when so ordered in writing by the Contracting Officer. Persons operating vehicles or other contractor-owned equipment shall hold current applicable state driver's license or operator's permit.

SP-05 PICKUP SITES:

There will be five designated pickup sites within the Riverways, each within one mile of the following developed area: Big Spring, Alley spring, Akers Ferry, Powder Mill and Round Spring. Adequate measures shall be taken to prevent spillage of refuse during pickup operations. All refuse spilled during this operation shall be cleaned up prior to the truck leaving the site. The Contractor shall provide sufficient six (6) cubic yard containers at each pickup site needed to prevent overflow.

SP-06 SERVICE FOR CONCESSIONAIRES:

Contractor will provide solid waste disposal for National Park Service concessionaires at Alley Spring, Big Spring and Round Spring if the concessioner requests service. Cost for service to be billed at a rate not more than that charged to the nearest community for like service.

SP-07 HAULING EQUIPMENT:

Hauling equipment shall be an enclosed commercial collection truck, compaction type, designed to prevent loss of refuse in transit and during loading. All equipment shall be kept clean so as to prevent the putrefaction of adherent refuse particles and the breeding of flies therein.

SP-08 PICKUP SCHEDULE:

ALL REFUSE WILL BE REMOVED FROM EACH PICKUP SITE AS REQUIRED BY THE FOLLOWING SCHEDULE:

A. Bi-weekly (twice a week) collection and removal of refuse from containers October 1, through November 15, of each year of the contract, Monday and Friday pickup.

1. Big Spring
2. Alley Spring
3. Round Spring
4. Powder Mill
5. Akers Ferry

Sufficient containers to hold all refuse without overflow must be supplied by Contractor. Past use at these sites during this period has required a minimum of one container. All containers will be emptied twice a week at each site.

B. One day per week collection and removal of refuse from container November 16 through 31 of each year under the contract, Monday pickup.

1. Big Spring
2. Alley Spring
3. Round Spring
4. Powder Mill
5. Akers Ferry

Sufficient containers to hold all refuse without overflow must be supplied by Contract. Past use has required a minimum of three containers at each site. All containers will be emptied each day of pick-up at each of the sites.

Each container with loose paper, garbage, or refuse bundled in plastic bags shall be emptied. Containers shall not be over loaded, but shall be loaded so that the cover closes completely without excessive external force.

If it is determined by the Superintendent that an additional container is needed at the location due to initial inaccuracy in quantity estimating, the Contractor shall provide the container at the designated location for the period desired.

SP-10 HOURS OF COLLECTION:

No collections are to be made between the hours of 9:00 pm and 7:00 am.

SP-11 ERRORS AND OMISSIONS:

The Contractor will not be allowed to take advantage of any error or omission in these contract documents, as full instructions will always be given if such error or omission is discovered.

The Contractor shall, immediately upon his discovery of any error or detail which is discrepant or which otherwise appears to be in error, bring the same to the attention of the Contracting Officer for decision or correction.

SP-12 PARK RULES AND REGULATIONS:

The Contractor shall, conduct his work in conformance with such appropriate regulations as the Superintendent may prescribe, and shall so conduct his operations as not to interfere with or endanger the ordinary use of existing structures, roads, utilities, or other park facilities. Equipment, operations, and materials shall be confined to the limits defined by the Superintendent.

Special attention shall be given to the protection of facilities and vegetation adjacent to the work areas.

SP-13 TEMPORARY SUSPENSION OF WORK:

The Contracting Officer shall have the right to suspend the work, wholly or in park, for such period as he/she may deem in the best interest to the Government because of conditions which are considered unfavorable to the suitable prosecution of the work, or for failure by the Contractor to execute orders or to perform any provisions of this contract.

The Contractor shall not suspend the work without such written authority and shall immediately resume work when conditions are favorable or when deficiencies been corrected to the satisfaction of the Contracting Officer.

SP-14 LIQUIDATED DAMAGES:

Non-compliance with the foregoing terms of this contract will require the provision of liquidated damages in lieu of actual damages to the Government until such time as the Contractor resumes compliance with the terms of the contract or until the contract is terminated.

For purposes of this contract, such amount of liquidated damages shall be $100,000 per calendar day.

SP-15 OPTION TO EXTEND THE TERM OF THE CONTRACT:

This contract may be extended at the prices stated elsewhere in the contract, at the option of the Government, by the contracting Officer giving written notice of extension to the contractor by the first day of each fiscal year of the Government or within thirty (30) days after funds for the fiscal year become available, whichever date is the later; provided that the Contracting Officer shall have given preliminary notice of the Government's intention to extend at least 90 days before this contract is to expire. Such a preliminary notice of intent to extend shall not be deemed to commit the Government to extension. If the Government exercises this option for extension, the contract as extended shall be deemed to include this option provision. However, the total duration of this contract, including the exercise of any options under this clause, shall not exceed September 30, 1991.

SP-16 AVAILABILITY OF FUNDS:

Funds are not presently available for this procurement. The Government's obligation hereunder is contingent upon the availability of appropriated funds from which payment for the contract purposes can be made. No legal liability on the part of the Government for payment of any money shall arise unless and until funds are made available to the Contracting Officer for this procurement and notice of such availability, to be confirmed in writing by the Contracting Officer, is given to the Contractor.

SP-17 SERVICE CONTRACT ACT WAGE DETERMINATION:

Refer to Solicitation, Offer and Award.

SP-18 PLACE OF PERFORMANCE:

This contract will be administered by Contracting Division, National Park Service, Midwest Regional Office, 1709 Jackson Street, Omaha, NE 68102, Telephone 402-221-3453.

SP-20 DURATION OF CONTRACT:

The duration of this contract is the fiscal year October 1, 1988 through September 30, 1989.

The Contractor reserves the right to cancel this contract on 90 days written notice and payment of Termination Charges.

SP-21 INSURANCE:

A. Compensation - Before commencing any work, the contractor shall furnish compensation insurance for employees engaged in this work, shall comply with the Workmen's Compensation Laws of the State of Missouri, and shall give proof of such insurance satisfactory to the Contracting Officer.

B. Liability - The Contractor shall maintain such insurance as will protect him and the Government from any claims because of bodily injury (including death) and property damage which may rise from and during the operating of this contract, and shall give proof of such insurance satisfactory to the Contracting Officer.

SP-22 ADVERTISING:

No signs or advertising shall be posted within the Park by the Contractor except with the approval of the Superintendent.

SP-23 REFUSAL TO DIVULGE INFORMATION:

Except as provided by the terms of the contract, the Contractor warrants and stipulates that neither he nor any of his officers, partners, principal stockholders, or agents will refuse or has refused to furnish any agency, establishment, or instrumentality, or any branch of the Government, information or record pertaining to this contract, or any other government contract or subcontract to a government Contract to which the Contractor is or has been a party.

SP-24 PAYMENTS AND INVOICING:

b. Payment will be made monthly by the Finance Office, National Park Service, Midwest Regional Office, based on the submission of a properly prepared invoice in accordance with paragraph c. below.

c. Invoices for monthly service shall be submitted in one (1) original and three (3) copies as follows:

(1) Submit invoices to:

Contracting Officer's Representative
Ozark National Scenic Riverways
Van Buren, Missouri 63965

(2) Invoices shall reflect the following:

(a) Company Name

(b) Invoice Number and Date of Invoice

(c) Contract Number

(d) Dates of Actual Pick up

(e) Total Amount of Invoice

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Appendix E.
Example of Arrangement With Concessioner

This paper was produced by Yosemite Park and Curry Company and reflects data and conditions existing in 1990.

RECYCLING PROGRAM OF YOSEMITE PARK AND CURRY COMPANY

In response to many requests for information, we have prepared this report on the operation of our recycling program and our refund system on soft drink and beer containers. We hope it will useful to other Park Concessioners, hotel and motel operations, and environmental groups that want specific information about programs in actual operations.

The idea that recycling is desirable took hold in the United States during a period of heightened environmental concern in the early 1970's. Since then, many voluntary community recycling programs of various types have been established and the recycling of aluminum and glass has received wide publicity.

In May, 1974, the Yosemite Park And Curry Company (YP&CCo) embarked on a program to recycle all possible materials and adopted the goal of eliminating all possible garbage. This program was further expanded in May of 1976 by the establishment of a 5 cent refund on all soft drink and beer containers sold in YP&CCo. stores in Yosemite National Park. This creates a financial incentive for park visitors and employees to participate more fully in the recycling program.

Here are some of the operational details of the program for your use. Any further question should be addressed to Ed Hardy, Chief Operating Officer, of YP&CCo., or Garrette De Bell, Environmental Advisor to the Company.

Each material must first be collected and separated from non-compatible materials, prepared for shipment, stored, and then shipped to the secondary materials dealer.

Here is a breakdown of pertinent information for each material handled.

Cardboard

Cardboard is saved by operating units, including the Village Store, smaller satellite stores, restaurants, hotels, gas stations, and the Central Warehouse. The cardboard is backhauled from the unit to the Central Warehouse by warehouse trucks as they return from making deliveries. Larger units flatten the cardboard and store it in the warehouse racks in which product was shipped to the unit. Smaller units place flattened cardboard into larger boxes which are hauled (as is) to the Warehouse.

Once at the Warehouse, the corrugated cardboard is baled into 750-pound bales using a Model EA30606H0FS6 Nichols Bailer obtained in November 1984 for $9,620. The average recycling attendant takes from 20 to 30 minutes to produce one 750-pound bale. The bale is then removed onto a pallet and moved by forklift or pallet jack to the back door where is stored on a pallet until a semi-trailer load accumulates. It takes approximately 30 bales to make a load. During the summer, we produce about a tone of baled cardboard daily. When a truckload of cardboard is produced, a semi-trailer is hauled by Gonzales Trucking to Independent Paper & Stock (IPS) in Sacramento. The recent price ranges from $20 to $90 per ton.

Other Fibers

In addition to corrugated cardboard, chipboard (flat cardboard) and newsprint are recycled. The chipboard is baled in small amounts with the corrugated cardboard.

Newspaper comes to us in small amounts and is simply boxed and shipped with the cardboard, then purchased by IPS for $15 to $35 per ton. Newspaper is also saved, then transported to the High Camps (when needed) to start fires.

In evaluating the costs of recycling cardboard and other fibers, it is important to take into account the disposal costs saved, as well as the labor and capital costs of recycling and the income realized. In our case, each 750-pound bale of cardboard would occupy approximately 8 cubic yards of dumpster space which we currently pay a monthly rate to have handled by Total Waste Systems (TWS) plus a tipping fee at the county landfill.

We have initiated a successful waste paper reclamation program, recycling all outdated files and records along with computer paper. The paper in most cases is separated according to types at the collection site, then collected and stored in 3 cubic yard bins. Shipment follow when there is enough for a 28-foot trailer. These products are sold along with other paper materials to IPS. Computer paper brings a price of $80 to $180 per ton. Waste paper, at give away, is from $.0 to $25.00 per ton.

Beverage Containers

All soft drink and beer containers sold by YP&CCo. in stores and vending machines in Yosemite carry a 5 cent deposit/refund. This system was voluntarily instituted by the YP&CCo. in corporation with EPA and NPS to help the EPA determine the real costs and the solutions to any operational problems that might develop. The program was so successful that it continued as a routine after the test period was over in September 1974. Each container is marked with Garvey Formula 300 frozen food ink in violet.

The marking of container by an experienced person takes approximately an hour for 200 cases. Cans are marked on the bottom, bottles on the side or bottom. We have not been able to find an ink that will adequately stick to containers that is of food grade; thus, cans are marked on the bottom, rather than the top. Unmarked containers are also accepted for recycling at the Recycling Center. One cent is refunded for unmarked aluminum cans and glass. Currently, our return rate is around 43%, resulting in a shipment of 1/2 ton to 1 ton of aluminum per week, bringing in approximately $1,900 including our redemption value. Quantities of glass are shipped in truckload along with other recycling materials and bi-metal is shipped with scrap metal. The off-season volume, of course, is much less.

Each material is then handled separately for recycling. There is some variation in prices paid for recycled materials, but, more importantly, different buyers set different conditions, depending on their needs for the materials and their business practices.

It is wise to consider the distance of paid (as opposed to deadhead) shipping, days and times materials will be accepted, whether or not they help unload the materials, whether they have a scale to do the weighing or if an extra stop to obtain a certified weight ticket is required, and if so, where. To give an example of an important variable: We sell our glass for $78.25 per ton to Owens Illinois. They require it to be color sorted but do not require that the small neck rings be removed. They pay $20.00 for co-mingled colors.

Aluminum

Aluminum is the easiest material to handle. Gonzales Trucking hauls 28-foot vans full of aluminum cans to IPS in Sacramento. Also, a stakebed 3/4 ton truck makes the rounds of our units in Yosemite valley daily between 8 a.m. and 5 p.m., picking up beverage containers from units and from recycling stations located in dormitory housing areas. The bags of aluminum are then taken to a small parking lot where they are loaded into a 28-foot trailer for storage. We simply empty the cans from bags into a 28-foot van and Gonzales Trucking hauls the vans to IPS in Sacramento. We realize about $1,200 (including California redemption value) each week from aluminum sales during the summer. This helps offset labor costs of operating the program.

Glass

We handle glass by collecting it in cardboard boxes, sorting it by color and dumping it into a glass crusher *Can-Pak Model GC100E). The crushed glass fill a 4'x4'x3' vinyl bag which hold 1500 pounds. This is the most efficient way to handle glass we have seen. The glass crusher had been bought from Ownes Illinois by deducting $5 from each tone of glass sold to them. The machine was paid for in approximately 3 years in December, 1988. After the vinyl bags are full, we store them until we get a 28-foot trailer load (14 bags). Gonzales Trucking hauls our glass, along with the other recycling materials.

Scrap Metal

Scrap metal of various types, including copper, brass and steel are accumulated until a truckload is on hand. A scrap dealer then comes and takes it away.

Food Wastes

Most food wastes in our restaurants, other than fat and bones, are disposed of by using a Model SSD-8, 10 horsepower Waste King Universal commercial disposal to add to the waste to the sewer system. Smaller disposal are installed in most employee housing, with the last units new being placed.

Cooking grease is saved in 55-gallon drums specially fitted with a tight top and is picked up on a drop-in basis by our collectors.

Wood

Wood scrap from our carpenter shop is cut up and used for firewood by employees in their fireplaces. Wood from demolition projects is made available to campers for campfires when possible.

Pallets

Pallets are collected and saved at the Central Warehouse. When a load is accumulated, the pallets are hauled to Fresno to a perspective buyer.

Used Motor Oil

Oil is collected at the Yosemite Valley garage and service station. Presently, we pay $.25 per gallon plus freight. Refinery Services of Patterson, California is our vendor.

Auto Batteries

Auto batteries are collected at the Yosemite Valley garage and service stations by a licensed EPA hauler. No exchange of money for the batteries take place.

Anti-Freeze (Ethylene Glycol)

Anti-freeze is collected at the garage and stored until a 500 gallon is full. When the tank is full, Environmental Services of Palo Alto, California, picks up the full tank and replaces it with an empty tank.

Appendix F.
Applicable EPA Beverage Regulations and NPS-48 Concession Guideline

Excerpted from NPS-48, Chapter 33.

BEVERAGE CONTAINER PROGRAM.

1. Law

P.L. 89-272 Solid Waste Disposal Act, October 20, 1965 as amended by P.L. 91-512, Resource Recovery Act, October 26, 1970 (Section 211), 42 U.S.C. 3251-3259, Executive Order 11752.

If an Executive Agency. . . has jurisdiction over any real property or facility the operation or administration of which involves such agency in solid waste disposal activities such an agency enters into a contract with any person for the operation. . . of any Federal property or facility, and the performance of such contract involves such person in solid waste disposal activities, then such agency shall insure compliance with the guidelines recommended under section 209 and purpose of this Act in the operation or administration of such property of facility, or the performance of such contract. . .

2. Regulation

40 CFR Part 244 Solid Waste Management Guidelines for Beverage Containers.

Sec. 244.100 SCOPE

(b) Section 211 of the Act and the Executi Order 11752 makes the "requirements" section of the guidelines mandatory upon Federal Agencies. They are recommended for adoption State and local governments and private agencies.

(c) (1) These guidelines for Beverage Containers are intended to achieve a reduction in beverage container solid waste and litter, resulting in savings in waste collection and disposal costs to the Federal Government. They are also intended to achieve the conservation and more efficient use of energy and material resources through the development of effective beverage distribution and container collection systems.

(4) Final determination of how the requirements of the guidelines will be met rest with the head of each Federal Agency.

3. Policy

Management Policies Manual, Chapter VIII,
Beverage Container Program

The National Park Service encourages the saving of energy and the reduction of litter through the use of recyclable containers wherever practical. To that end, NPS has established a program for the use of returnable beverage containers for which a deposit is charged.

4. Responsibility

Park Mangers/Superintendents are responsible for application of the program, subject to the procedures set forth below.

5. Procedures

a. Beverage Container Guidelines Requirements

(1) All beverages in beverage containers sold or offered for sale shall be sold in returnable beverage containers.

(2) A deposit of at least five (5) cents shall be charged unless the local area has an established return system at a lower minimum deposit level.

(3) The concessioner shall accept from consumers the empty beverage containers sold by that concessioner and pay the consumer the refund value of the container.

(4) Refunds shall be provided at the place of sale (point of purchase) whenever possible or as close to that point as practical if original point is unattended.

(5) Refillable beverage containers shall be returned to distributors for refilling and all other returnable containers shall be returned by recycling where markets for recyclable materials are available.

(6) All beverage container must clearly indicate by embossing, stamp, or label securely affixed to the beverage container, that the container is returnable and the refund value of the container.

(7) Concessioner must inform consumers that beverages are sold in returnable beverage containers by placing a sign or shelf label or both at the point of purchase of the container. The sign must state that the containers are returnable, list the beverage price and deposit amount, indicate where empties may be returned for refund and show a sample of the identifying label, stamp or embossing is so marked.

b. EXCEPTIONS

It is recognized certain conditions may exist in which it may not be practical to enforce the requirements of the Beverage Container Guidelines due to geographic or logistical problems. Therefore, the program may be discontinued at the discretion of the Superintendent if one or more of the following conditions apply:

(1) Program requires additional manpower or incurs other costs which result in its losing money.

(2) Efforts to implement the requirements have failed to induce consumers to buy beverages in returnable containers or to return them when empty.

(3) Impractical to establish refund location in small remote outlets where the majority of consumers are transient and it is not possible to use returnable containers effectively.

(4) There is no market for recyclable container within a reasonable distance.

(5) The program may not be discontinued if State or local law in the area mandates a deposit program.

Superintendents are required to report to the Regions those concession facilities exempted from the program.

Non-implementation decisions are not to be construed as a policy against environmental progress. All Superintendents and concessioners must continue to promote energy conservation and waste reduction by any means possible and continue to inform park visitors of NPS commitment in both of these areas.

c. REPORTS

Annual reports previously required for the Beverage Container Program are discontinued.

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Appendix G
Starting A Recycling Program

Paper submitted by Garrett De Bell, Environmental Consultant to MCA and
the Yosemite Park and Curry Company

HOW TO START A RECYCLING PROGRAM

This report is based on the fifteen year experience of the Yosemite Park and Curry Company program and the initial start up of the MCA recycling program at Universal City. The primary purpose of this document is to help other MCA companies initiate or improve recycling programs. It has been modified somewhat for use in the National Parks.

WHY RECYCLE:

Recycling saves energy, natural resources, land, and water. Recycling is easy, saves money, and is environmentally sound. Recycling is expected of any individual or organization profession environmental goals.

Recycling is a place to begin a comprehensive environmental program. It is quicker, easier, and less expensive to begin than other environmental programs such as energy conservation, landscaping with native plants, alternative transportation, and alternate sources of renewable energy. These can follow later.

Recycling is often the first step for many individuals and organizations as they begin participating in environmental protection is a big way.

Many jurisdictions are considering making recycling mandatory because of rapidly shrinking space in landfills. Most jurisdictions are considering raising garbage disposal fees, particularly for materials that could have been recycled. The economics of recycling are already good and will only improve.

HOW TO GET STARTED

Determine which recyclable waste material your operation produces. Computer paper, office paper, magazines, newspapers, corrugated cardboard, chipboard (flat cardboard), aluminum, glass, copper, tin cans, scrap metal, PET plastic (clear beverage bottles, e.g., Evian Water), crankcase oil, Freon, and ethylene glycol antifreeze are recyclable materials.

Consider beginning your program with a pilot program with one or more materials and locations. Then expand locations and materials as you gain experience and expertise. Material which are discarded in large amounts should be considered. This will include office paper and cardboard. Materials of high value should be considered.

This will include aluminum, PET plastic, and copper. Materials which are toxic and can't be properly disposed of in the garbage stream should be included if possible. This includes waste crankcase oil and automotive antifreeze. Freon should be included because of the damage it does to the ozone layer.

Once you have identified the materials for possible inclusion in your program, contact salvage dealers. They can be found in the Yellow pages of the phone book under Recycling, Oil-Waste, and Waste (many categories of paper, hazardous, oils, etc.).

The best way to find a recycler for Freon is by calling the manufacturer of the equipment and asking for the addresses of distributors of the equipment near you. Robinair (419/485-5561) makes the Freon recycling system used by the Yosemite Park and Curry Company. They furnished names of ten distributors near Hollywood and Fresno, California.

Once you have identified potential recyclers or scrap dealer, then solicit bids for the initial recycling program. One vendor will probably be willing to bid on all materials except waste oils, hazardous materials, and Freon. If possible make provision for expansion of materials and locations in the initial bid. Alternatively make the initial contract period short enough that you can expand quickly.

WHAT TYPE OF RECYCLING PROGRAM:

There are three basic types of recycling programs with differing costs ore revenues from the vendor as well as different internal costs for labor and equipment. I recommend considering at least two of these approaches in your bidding process.

1. The simplest system is delivering the waste materials to the vendor's location. This will bring the highest revenue, but have the highest costs for labor, transportation, and probably baling. This system has the advantage that you can start immediately, just getting a list of the materials the vendor will buy, the prices, the hours of operation, and the required specifications.

The specifications vary from dealer to dealer for all types of programs and materials. They are a very important consideration. A lower price for a grade of material that doesn't have to be as carefully sorted as a higher grade will often result in higher profits and more recycling. For instance, requiring the removal of staples from waste paper will deter many from participating in the program.

A variant of this system involves the vendor picking up waste materials from one location at your facility. This is the system used successfully by The Yosemite Park and Curry Company in Yosemite National Park.

2. Perhaps the most generally satisfactory system is where the vendor picks up recyclables at many of your locations including individual floors of office buildings, but not individual desks within a facility. This is the system being put in place at Universal City. It is in the pilot stage

and beginning expansion to new locations for cardboard, all grades of waste paper mixed, aluminum, glass, and PET plastic. So far it si working well. This option involves your employees and will help educate and inform them to keep the program going. This option is utilized by a number of companies in the entertainment industry.

3. The most expensive system in terms of the vendor's bid will be the full service system where the recycler does it all for you. Pickups will include individual desk locations. Signs and memos will be done for you. It is a turn key operation. You labor and equipment costs will be the lowest of the options, but the vendor will often charge you, rather than paying for the materials as in the other two options. This option is also utilized by a number of companies in the entertainment industry in the Hollywood area.

I recommend the middle option except in special cases. If you have very low labor cots or a volunteer program you might prefer the first option. If you have very high labor costs and no janitorial type staff, you might choose the third option.

At MCA, the Corporate Material Group independently chose the middle option.

Request bids for each of the options that might fit your needs Some vendors will bid on each option, some only on one or two.

WHO WILL MANAGE YOUR PROGRAM:

I have found the Purchasing Department to be the optimal place to handle the executive level of management of the recycling program. Recycling is purchasing in reverse. Many Purchasing Departments already handle disposal of obsolete equipment such as cars, computers, etc.

They are familiar with the bidding process and can more efficiently prepare bid documents, solicit and evaluate bids, and select the vendor. They are also in a good position to make the best deals on equipment needed to operate the program.

I believe it is very important to keep the financial negotiations in the hands of professional purchasing executives to avoid an idealistic environmentalist making a poor deal. It is also important to build into the mainstream for your operations. At the operating level, the program can be handled by the janitorial staff, a special recycling crew, or a combination. At Yosemite we use a combination, primarily relying on a recycling crew that collects materials from individual units and transports, processes, and load the materials. One recycling manager oversees the entire program. At MCA we are using the existing staff because the vendor picks up at so many locations. Three managers with other substantial responsibilities oversee the program.

Someone will have to coordinate pickup schedules, requests for more containers, more pickups, more or different signs, etc. This can be the recycling manager or a manager in the purchasing area. Some hands-on involvement is essential so the problems of the operating areas are addressed.

WHAT EQUIPMENT AND SUPPLIES WILL YOU NEED:

Depending on which option you pick, you will need various equipment. With the third option, you will need almost nothing. With the second option, you will need containers for the recycled materials at the individual work station, copier, kitchen, etc., as well as, centralized containers on each floor. Depending on your vendor, all or some of these may be furnished in the deal. You will need signs and memos explaining the program. With the first option, you need the same equipment as for the middle option plus trucks, balers, etc. to process and ship the materials to the scrap dealer.

In your selection of containers, it is important they be distinctive and consistent, even if this takes a little longer to start operating at full scale. The cans should not look like garbage cans. The best way to accomplish this is to use distinctive colors and/or a distinctive logo. At MCA we have tentatively decided on blue and green containers made of recycled plastic and are using off-the-shelf Rubbermaid containers until the specified ones become available in early 1990.

We are using Woody Woodpecker as a distinctive logo on each container from desk recycling containers to cardboard bins. Woody is being used as an environmental spokesman by The National Parks and Conservation Association and the Conference of National Park Concessioners. Woody is being considered as a logo and spokesman for the entertainment industry.

We can assist in providing camera ready copy, etc. Rubbermaid make containers of recycled plastic and in addition will silkscreen the Woody logo and recycling information such as "Recycle paper" on containers.

HOW TO GET SUPPORT AND PARTICIPATION

Clear information is critical so everyone using a given area knows about the recycling program and where each waste material should go. Memos sent to each employee, articles in newsletters, and signs need to clearly specify what can and cannot be included with each type of recyclable material. This varies by vendor and can not be generalized. What is why it is so important to be sure you know what grade of waste a dealer is willing to accept. The biggest problem with recycling programs is getting contamination of the material to the degree that the vendor will not pay for the grade or even accept the material.

The problem should be promoted in employee training programs and publications, newsletters, management meeting, award ceremonies, etc. Leadership by example is perhaps the best motivator. At both MCA and Yosemite, the employees are very much aware of the support for the environmental program by senior managers. A key executive who is frequently seen recycling household or office wastes provides more motivation than a ream of memos. An executive desk with a recycling container ad no garbage can make a powerful statement.

Incentives, financial and otherwise, can boost participation enormously. In Yosemite, the return rate of aluminum containers increased from a ton a year to a ton a week with the implementation of a 5 cent refund value. Raising the refund value to 10 cents as has been done in Michigan has been shown to increase the level of participation even further. Consideration should be given to a 10 cent deposit at the federal, state, or agency level. The National Park Service has a 5 cent deposit program on the books, but many parks have exemptions. Consideration should be given to the find ways to include more parks in the program. Investigation may show that recycling is much easier than it was a few years ago when the exemptions were granted. There are more markets for recyclable wastes now and more companies in various areas of the country have entered the recycling business. Employees and guests to the national parks are much more aware of recycling than they were just a few years ago.

Most recycling programs should show a profit. This can be returned to employees (for private sector) or to a cause they support. Consider letting them have a voice in the selection. In Yosemite, the Yosemite Park and Curry Company's profits from recycling t to an environmental fund which has helped support a variety of environmental objectives in the Yosemite region. MCA has pledged its recycling profits to environmental programs selected by Permanent Charities, a charity for the entertainment industry.

Recognition of those who help the program is very worthwhile. Some cities inspect trash cans at random and give prizes to the owners of cans with no recyclables in them. You will find many enthusiastic employees who want to help recycling work.

SUGGESTED READING:

Garbage, The Practical Journal for the Environment Has articles on a wide range of environmental topics including a strong emphasis on waste reduction and recycling. It is a popular magazine for the general public. To subscribe, call 800/274-9909.

Resource Recycling, North America's Recycling Journal is intended for those in the recycling industry and has a lot of good information on markets for recycled materials, equipment for recycling, etc. For information, call 503/227-1319.

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07/17/92